CLAIMS:

1. A method of forming a patterned conductive element for an implantable medical device, the method comprising the steps of:

(i) depositing a supplementary material on a sheet of conductive, parent material to form a sheet of composite material;

(ii) applying a carrier material over the supplementary material of the composite sheet to form a sheet of semi-finished material;

(iii) removing portions from at least the conductive parent material of the sheet of semi-finished material in accordance with a desired pattern corresponding to a patterned conductive element to be formed; and

(iv) releasing at least the carrier material from the sheet of semi-finished material.

2. A method according to claim 1, wherein the step of applying the carrier material to form the sheet of semi-finished material comprises co-rolling.

3. A method according to claim 1 or claim 2, wherein the conductive parent material is biocompatible.

4. A method according to claim 3, wherein the conductive parent material is platinum.

5. A method according to claim 3, wherein the conductive parent material is platinum/iridium.

6. A method according to any one of the preceding claims, wherein the conductive parent material of the sheet of semi-finished material is no greater than 2mm thick before the co-rolling step.

7. A method according to claim 6, wherein the conductive parent material of the sheet of semi-finished material is no greater than 400μm thick before the co-rolling step.

8. A method according to claim 7, wherein the conductive parent material of the sheet of semi-finished material is no greater than 200μm thick before the co-rolling step.

9. A method according to claim 8, wherein the conductive parent material of the sheet of semi-finished material is no greater than 150μm thick after the co-rolling step.

10. A method according to claim 9, wherein the conductive parent material of the sheet of semi-finished material is no greater than 50μm thick after the co-rolling step.

11. A method according to any one of the preceding claims, wherein the supplementary material is selected from any one of the group consisting of TiN, Ta, Nb, Ni and Ir.

12. A method according to any one of the preceding claims wherein the carrier material is conductive.

13. A method according to claim 12, wherein the carrier material is copper or steel.

14. A method according to any one of the preceding claims, wherein the removing step is performed by micro-machining.

15. A method according to claim 14, wherein the micromachining includes any one selected from the group consisting of EDM, milling and cutting.

16. A method according to any one of the preceding claims, further comprising the step of coating the patterned parent material with a layer of resiliently flexible material before the releasing step.

17. A method according to any one of the preceding claims, wherein the releasing step is by dissolution.

18. A method according to any one of the preceding claims, wherein the patterned element of parent material after the releasing step, is at least 99.95% pure.

19. A method of making a sheet of semi-finished material, the method comprising the steps of:

depositing a supplementary material on a platinum sheet to form a composite sheet; and

applying a carrier material over the supplementary material, to form a sheet of semi-finished material;

wherein the platinum sheet on the sheet of semi-finished material has a thickness being no greater than 100μm.

20. A method according to claim 19, wherein the platinum sheet on the semi-finished material has a thickness no greater than 40μm

21. A method according to claim 19 or 20, wherein the semi-finished material is no greater than 1000μm thick.

22. A method according to claim 19, wherein the semi-finished material is no greater than 200μm thick.

23. A method according any one of claims 17 to 20, wherein the supplementary material is any one selected from the group consisting of TiN, Ta, Nb and Ir.

24. A method according to any one of claims 17 to 21, wherein the carrier material is conductive.

25. A method according to claim 22, wherein the carrier material is copper or steel.

26. A method according to any one of claims 17 to 19, wherein the platinum sheet on the semi-finished material is at least 99.95% pure.

27. A method of forming an electrode array for an implantable medical device, the method comprising the steps of:

(i) preparing a semi-finished sheet by depositing a supplementary material on a platinum sheet and then applying a carrier material over the supplementary material;

(ii) removing portions from at least the platinum sheet in accordance with a predetermined pattern, the pattern including a linear array of stimulating or recording pads and at least one electrical conduction means extending away from each one of the pads to a location distal from the pad; and

(iii) releasing the carrier material.

28. A method according to claim 27, wherein the electrical conduction means each have an average width of less than 100μm.

29. A method according to claim 28, wherein each stimulating or recording pad has an area of less than 0.5mm^2.

30. A method according to claim 29, wherein each electrical conduction means is electrically insulated from its neighbour, the spacing between neighbouring wires being less than 100μm.

31. A method according to claim 30, further comprising the step of coating the platinum sheet with a layer of resiliently flexible material before the releasing step.

32. A method according to claim 31, wherein the step of applying the carrier material comprises co-rolling.

33. A method according to claim 32, wherein the supplementary material is any one selected from the group consisting of TiN, Ta, Nb, Ni and Ir.

34. A method according to claim 33, wherein the carrier material is conductive.

35. A method according to claim 34, wherein the carrier material is copper or steel.

36. A method according to claim 35, wherein the removing step is performed by any one selected from the group consisting of EDM, milling and cutting.

37. A method according to claim 36, wherein the releasing step is by dissolution.

38. A method according to claim 37, wherein the platinum sheet is at least 99.95% pure.